



AF2839

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : Confirmation No. 4417 **Corres. and Mail**
Masahiro UEKAWA et al. : Docket No. 2001-1018A **BOX AF**
Serial No. 09/918,829 : Group Art Unit 2839
Filed August 1, 2001 : Examiner Jean F. DUVERNE

OPTICAL DEVICE PERMITTING
PASSIVE ALIGNMENT OF LENS
ELEMENT

RESPONSE UNDER 37.CFR1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2839

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In view of the following remarks, reconsideration of the rejections set forth in the Office Action of January 6, 2004 is respectfully requested.

Claims 17-36, including independent claim 17, are presently pending in this application. In this regard, the Examiner has rejected claims 17, 19-24, 26, 28, and 32-36 as being unpatentable over the Pimpinella reference (USP 5,257,332); has rejected claims 18, 25, and 31 as being unpatentable over the Pimpinella reference in view of the Tabuchi reference (USP 5,481,629); has rejected claim 29 as being unpatentable over the Pimpinella reference in view of the Tabuchi reference, and further in view of the Ham reference (USP 5,543,255); and has rejected claim 32 as being unpatentable over the Pimpinella reference in view of the Tabuchi reference, and further in view of the Matsumura reference (USP 5,625,493). However, for the reasons discussed below, these rejections are respectfully traversed. In contrast to the Examiner's position, it is submitted that claims 17-36 are clearly patentable over the prior art of record.

As explained on pages 1 and 2 of the original specification, costly and time-consuming active alignment techniques have conventionally been necessary in order to align a lens element with an optical element. However, due to the arrangement of the components in the present invention, the optical device of the present invention provides a simplified and, therefore, quick and accurate device for aligning an optical element with a lens element so that active alignment techniques are no longer necessary (see page 2, line 15 through page 3, line 4 of the original specification).

A description of the present invention as recited in independent claim 17 will now be provided with reference to the drawings of the present application. However, reference to the drawings is provided only for the Examiner's benefit, and is not intended to otherwise limit the scope of the claims to only those embodiments specifically disclosed in the application.

As illustrated in Figures 1 through 4 and recited in independent claim 17, the optical device of the present invention comprises an optical substrate 11, a lens element 13 formed on the optical substrate 11, *an optical element 16*, and a supporting substrate 12 *supporting the optical element 16*, and the supporting substrate 12 has a grooved surface with a groove 18 formed therein. The optical substrate 11 has a projecting part 14 resting within the groove 18 formed in the grooved surface of the supporting substrate 12 so as to align the lens element 13 with the optical element 16. As can be readily understood from the description and the drawings of the present application, this arrangement allows the lens element 13 to be quickly and accurately aligned with the optical element 16 without the need for any costly and time-consuming active alignment techniques.

The Examiner asserts that the Pimpinella reference discloses an optical substrate 11, a lens element 20, a supporting substrate 22 and a groove 24, 27, 28 formed in the supporting substrate 22. The Examiner further asserts that the optical substrate 11 has a projecting part 31, 32 that rests in the groove 27, 28 formed in the supporting substrate 22 so as to align the lens element 20 with an optical element. However, the Examiner does not specifically state which of the components of the Pimpinella reference corresponds to the optical element recited in claim 17. In this regard, since the Examiner asserts that sphere 20 supported by substrate 11 of the

Pimpinella reference corresponds to the lens element of the present invention, then it would seem that fiber end portion 18 supported by substrate 10 would correspond to the optical element of claim 17. As clearly illustrated in Figures 1 and 2 of the Pimpinella reference, however, the coupler (i.e., “supporting substrate”) 22 does not support the fiber end portion 18. In fact, the coupler 22 does not support any of the components of the coupler device. In contrast, the coupler 22 merely serves as an additional alignment component that is unnecessary in the present invention due to the arrangement of the components as recited in claim 17.

Specifically, as illustrated in Figure 1 of the Pimpinella reference, first substrate 10 clearly supports fiber end portion 18 of a first optical fiber 15, as well as a lens element 20. Similarly, second substrate (i.e., optical substrate) 11 clearly supports fiber end portion 18 of a second optical fiber 16, as well as a lens element 20. Thus, the first substrate 10 could *possibly* correspond to the supporting substrate of independent claim 17, while the second substrate 11 could *possibly* correspond to the optical substrate 11 of claim 17. However, in that case, neither the first substrate 10 nor the second substrate 11 has a projecting part that rests within a groove formed in a grooved surface of the other of first substrate 10 or second substrate 11, as required by claim 17.

In addition, as explained in the amendment filed on September 22, 2003, the alignment spheres (i.e., “projecting parts”) 31, 32 of the Pimpinella reference rest within *wells* 27, 28 of coupler 22, rather than within a *groove* (see column 2, line 31 through column 3, line 10 of the Pimpinella reference). In the response to the amendment filed September 22, 2002, the Examiner asserts that the Pimpinella reference clearly shows a groove 24 formed in the coupler (i.e., “supporting substrate”). However, as the Examiner notes, the groove 24 formed in coupler 22 receives the optical fibers 15, 16, but does not receive the “projecting parts” 31, 32. Instead, as clearly explained in the Pimpinella reference and noted above, the alignment spheres 31, 32 are received within the *wells* 27, 28.

In view of the above, it is submitted that the Examiner is providing a strained interpretation of the Pimpinella reference by inconsistently identifying components as corresponding to elements of independent claim 17 in an attempt to meet all of the limitations of

claim 17. As explained above, however, a consistent analysis of the Pimpinella reference clearly indicates that the Pimpinella reference does not disclose or even suggest all of the elements arranged as recited in independent claim 17. Moreover, it is submitted that the Tabuchi reference, the Ham reference, and the Matsumura reference also do not disclose or suggest all of the elements, including a supporting substrate supporting an optical element and having a groove formed in a grooved surface thereof for receiving a projecting part of an optical substrate, as recited in claim 17. Therefore, one of ordinary skill in the art would not be motivated by these references to modify the Pimpinella reference or to combine the references so as to obtain the invention recited in independent claim 17. Accordingly, it is respectfully submitted that independent claim 17 and the claims that depend therefrom are clearly patentable over the prior art of record.

In addition to the distinctions discussed above, the dependent claims 33-36 recite several additional features that further distinguish the present invention from the prior art. Furthermore, these features provide additional benefits over the prior art. Specifically, it is known that in an optical alignment device, if the number of separate and independently-movable components is reduced, the alignment accuracy and reliability will be greatly improved. Thus, dependent claim 33 recites that the lens element 13 is *fixed* to the optical substrate 11.

As explained above, the Examiner asserts that the Pimpinella reference discloses a lens element 20 formed on an optical substrate 11. However, the Pimpinella reference merely discloses that the substrate 11 has a well 19 that “contains” the spherical lens element 20 (see column 2, lines 50 and 51). The Pimpinella reference does not, however, either disclose or even suggest that the spherical lens element 20 is *fixed* to the optical substrate.

Nonetheless, the Examiner apparently takes the position that this feature would be obvious to one of ordinary skill in the art because this involves only routine skill. The Applicants, however, respectfully disagree. The Pimpinella reference, as noted above, does not even contemplate or suggest fixing a lens element to an optical substrate. Moreover, the U.S. Court of Appeals for the Federal Circuit has clearly established that an Examiner’s hindsight reasoning is clearly improper. In this regard, the Federal Circuit has stated that the question of

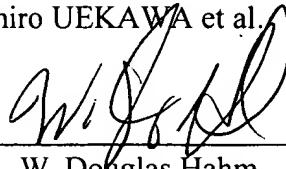
motivation is material to patentability, and cannot be resolved based on subjective belief and unknown authority. See *In Re Sang Lee*, 277 F.3d 1338, 61 USPQ.2d 1430 (Fed. Cir. 2002). Furthermore, the courts have also established that it is improper to make such a rejection by simply using “that which the inventor taught against its teacher.” See *W. L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). It is submitted that in the present case, the Examiner is using hindsight to apply that which the present inventors have discovered and taught against them. In this regard, there is absolutely no evidence to support the Examiner’s assertion that one of ordinary skill in the art would somehow have been motivated to develop an optical device in which the lens element is *fixed* to an optical substrate, as recited in dependent claim 33.

Furthermore, the Examiner’s application of the general principal that forming in one piece that which has formerly been formed in two pieces involves only routine skill in the art, is also traversed. In particular, the Examiner is requested to note that the arrangement of the present invention as recited in dependent claims 33-36 is instead an insightful design that is contrary to the understanding and expectations of the prior art, which heretofore has used costly active alignment techniques to align elements in conventional optical couplers with numerous independently-movable components, such as those of the Pimpinella reference. See *Schenk v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983).

In view of the above remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

Masahiro UEKAWA et al.

By: 

W. Douglas Hahm
Registration No. 44,142
Attorney for Applicant

RESPONSE UNDER 37.CFR1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2839

WDH/kes
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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